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THE SOIL SURVEY AND YOUR FARM.

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A radio talk by Dr. A. G. McCall, Chief of Soil Investigations, Bureau of Chemistry and Soils, delivered through WRC and 39 other radio stations associated with the National Broadcasting Company, January 5, 1931.

As I face this wonderful little instrument -- the microphone -- on the table before me, I appreciate the fact that most of my listeners think that the soil is about the most uninteresting topic that could be selected for a radio talk. But to those of us who are devoting our lives to the study of the origin, development and utilization of the soil this topic has a fascination and a compelling interest.

Consider for a moment the fact that the origin of every item of food served on your breakfast table this morning goes back to the soil which furnished the grass and grain consumed by the cow that produced the milk, cream and butter, and the feed consumed by the animals from which we took our bacon, eggs and other animal products. The grain grown on our farm lands contributed the appetizing breakfast foods and the soils of our own land and of the tropics the oranges, bananas and other fruits that occupy a prominent place on our table. I wish to impress upon you the fact that the soil is the one fundamental asset upon which all farming operations depend, and to which we must all look for food, raiment and shelter.

In the business world, a careful inventory of the assets of any enterprise is considered necessary for the successful operation of the business. The nation-wide soil survey being conducted by the Federal Department of Agriculture in cooperation with the State agricultural colleges and experiment stations is intended to furnish the inventory of our soil resources and other basic information essential to the successful conduct of our agricultural operations which constitute the largest and most important business enterprise in which our people are engaged. Since this work began, more than 30 years ago, a little more than half of the agricultural soils of the country have been surveyed and mapped, a total of between 1,100 and 1,200 counties constituting an area of about 800,000,000 acres of American soils. This work has the same relation to the country's soil resources as the Geological Survey bears to our mineral resources. The task has required a vast amount of work by a force of field men who have dug into the soil, measured the areas of the different kinds of soils, mapped these areas and described them in a thousand little books which accompany the large maps, the two together constituting the Soil Survey Report of a particular area.

In these reports the different kinds of soils are shown on an accurate base map by the use of different colors. The completed detail map of each area surveyed is usually printed on the uniform scale of one inch to the mile and shows not only the different kinds of soils but also accurately locates all of the important roads, towns, schools and even the dwellings on individual farms. The report accompanying the soil map fully describes the properties of the soil and subsoil, topography, water supply, drainage conditions, crop

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adaptation, general systems of farming and the methods of soil management followed. There is also included a general discussion of the agricultural development of the county, farm improvements, important products, market and transportation facilities and the general condition of the community. In the arid and semi-arid regions of the United States, the occurrence and character of soil alkali, ground water relations, irrigation problems, and other important conditions peculiar to these dry lands are also dealt with. In these soil survey reports the different kinds of soils are referred to by name, the name being composed of two parts, the first referring to the family or group to which the soils belong and the second part, corresponding to the given name, is somewhat descriptive of the character of the soil material. Thus we have in the coastal plains regions of the East and South a great group of soils which has many characteristics in common and to which the series or family name "Norfolk" has been given. Within this group, however, there is considerable variation in the physical make-up of the soils, that is, in the relative proportions of fine and coarse soil grains or particles. Norfolk Fine Sand is the name applied to the soils of this series in which the fine sand particles predominate as distinguished from the Norfolk Sandy Loam, another soil of the same family group but in which finer silt particles predominate. Houston Clay is the name given to the member of the Houston group having a brown colored surface and a predominance of very fine particles, while Houston Black Clay designates the soil of the same group or family, the surface of which is composed largely of very fine particles but which is black in color. Clarksville Gravelly Loam is the name applied to a certain soil of the Clarksville series to distinguish it from the Clarksville Loam in which no gravel is found in the surface layer.

The adoption of this system has made it possible for farmers as well as scientists to get on sufficiently familiar terms with their soils so as to call them by their first names and study their adaptation to different crops and their response to fertilizer applications and cultural treatments.

In addition to this information of very practical value which the soil survey gives farmers in more than a thousand counties, there are many other ways in which it has been of inestimable value. The use of the soil survey has saved large sums of money and furnished information for the location of sub-stations, the extension and development of certain crops, and the study of soil erosion.

After the advent of the boll weevil throughout the northern portion of the coastal plain and southern part of the cotton belt, the farmers and extension people began to look around for other crops that could be profitably produced. The soil survey maps of various counties in Georgia showed that there are extensive areas of soils in that State similar to the soils in North Carolina and South Carolina where tobacco, and to a less extent, alfalfa have been successfully grown. The development of an important tobacco growing industry in the State of Georgia within recent years is due largely to the soil survey, and the success of alfalfa growing in that State has been aided by this guide to proper soil selection.

The North Carolina Experiment Station has in the last few years, in addition to its six sub-stations, extended its plat work based upon the soil survey as it reveals the large and important types of soil in that State.

The reclamation service has used the soil survey during the past year in its investigation of certain tracts of land in the South with a view to the establishment of colonization projects.

Engineers engaged in laying pipe lines are using the soil maps in connection with laying out their work and preparing estimates.

A new interest in soil classification and mapping has developed in connection with reforestation. It is being recognized that soil survey is the basis of land classification, which should precede all systematic plans for reforestation, and the establishment of State and Federal Forest Reserves.

The detailed studies conducted by the soil survey have served to bring to our attention the fact that the impairment of the productive power of the soil by erosion is one of the most important problems confronting American agriculture. We are rapidly coming to a realization of the fact that vast areas are being robbed of their productive surface soil by the sheet washing and gullying that accompanies every severe rainstorm falling on unprotected lands. Plant food extracted from the soil by growing crops can be restored in the form of commercial fertilizers and soil improving crops, but the material removed by excessive rain wash can not be restored in this manner for the simple reason that this highwayman of the fields in time takes away the entire surface soil as well as the plant food materials. Careful measurements indicate that for some of the rolling lands of the Middle West under continuous corn growing the removal of the surface by erosion may proceed so rapidly that it requires only the brief period of eight to ten years to dissipate that which required five centuries for nature to build.

In conclusion I am going to read you a verse of home made poetry that recently came to my attention. It is read with apologies to Longfellow:

"Countless worn-out fields remind us  
We should build our land to stay;  
And, departing leave behind us  
Fields that have not washed away.  
When our boys assume the mortgage  
On the land that's had our toil,  
They'll not have to ask the question  
Here's the farm but where's the soil?"

If you wish a list of the counties that have been surveyed in your State, write to your Congressman or to the Bureau of Chemistry and Soils, Washington, D. C.



